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SUGGESTED AREAS OF RESEARCH WHERE AN EXCHANGE  
OF SCIENTISTS WITH THE GERMAN GOVERNMENT WOULD  
BE MUTUALLY PROFITABLE

CROPS RESEARCH

A meeting was held to discuss possible exchange of scientists between Crops Research scientific personnel and West German scientists. Professor Doctor Aufhammer and Dr. Ernst S. Schlange-Schoeningen, Agricultural Secretary of the German Embassy, met with Dr. Cullinan, Chief of the Horticultural Crops Research Branch, Dr. M. G. Weiss, Chief of the Field Crops Research Branch, and Dr. E. F. Knipling, Chief of the Entomology Research Branch. Each area of research activity was discussed and the following areas of work were considered for possible exchange of professional research scientists:

HORTICULTURAL CROPS RESEARCH BRANCH

At the present time the Horticultural Crops Research Branch is carrying on informal cooperation with Professor Rudolf, Institute of Koln, on apple scab resistant varieties. The Department's work in this area is cooperative with Purdue and Wisconsin. The general problem involves disease resistance in all types of fruit trees. At present, the informal cooperation in this area seems to be adequate and no further exchange is necessary at this time.

In the general area of potato production and disease and nematode resistance, informal cooperative work on the exchange of germ plasm has been very satisfactory. There is considerable interest in developing potato varieties with resistance to nematodes. The German scientists have had considerable experience in breeding potatoes for nematode resistance and it was thought that an exchange of research scientists in this area might be advantageous to both Governments.

FIELD CROPS RESEARCH BRANCH

Sugar beet disease problems were discussed at some length and it was pointed out that the German scientists have had more experience with the yellows virus disease than the U.S. scientists. It was felt that it would be profitable for U.S. scientists to study this problem in Germany.

The leaf spot disease of sugar beets is quite prevalent in sugar beet areas in Michigan. In this instance it might be well for German scientists to study this work in the U.S.

In the field of legumes, an exchange of germ plasm would probably be adequate.

Cereal crops - Professor Doctor Aufhammer suggested that all varieties of cereals that had been tested in their country could be made available to our scientists. There is need for more coordination in standardized testing procedures and this work could be facilitated if German scientists were to come to this country. Specifically, German scientists could study crown rust of oats at Ames, Iowa, leaf rust of wheat at St. Paul, Minnesota, or dwarf bunt of wheat at Pullman, Washington.



## ENTOMOLOGY RESEARCH BRANCH

### Insecticide Attractants and Repellants

It is believed that valuable information could be obtained in Germany on the methods used in the synthesis and biological screening of chemicals as insecticides, synergists, or insect attractants or repellants. Information available on correlation between chemical structure and biological activity toward insects would be very useful.

In return German representatives visiting the United States could be provided with reciprocal information on synthesis and screening methods used here. Investigations in this country on insecticide residues on crops and in livestock products also should be useful to the Germans.

### Insect Pathology

Germany is developing a fine organization for the study of insect diseases in biological control. Workers there have expressed interest in work in this country, particularly in the milky diseases of white grubs and in entomogenous nematodes. Since the work here has been under way longer we feel we have much of value to offer German workers in insect pathology.

Many of the insect pests in this country originated in Europe. A study of the role of insect pathogens in the biological control of those pests in Germany would be of considerable value to the United States and might lead to the beneficial introduction of insect diseases for biological control of important insect pests in this country.

### Bee Research

The Department has made advancement in several phases of apiculture that should be of considerable interest to bee workers in Germany. Remarkable progress on the relation of insect pollination to crop production and ways to increase seed yields through colony management should be of particular interest to them. Undoubtedly, they would also like to be informed of recent research developments and the practicable application of results pertaining to bee colony management, bee breeding and bee diseases and insecticide poisoning of bees. It is our understanding that German workers have extensive studies under way on bee behavior that would be of much interest to workers in the United States. Our researchers would also like to know first hand the advancements made in Germany on the control of bee diseases, particularly acarine disease and on ways of overcoming insecticide poisoning of bees. We would also like to exchange information on bee breeding.

## UTILIZATION RESEARCH

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### Problems or Projects of Mutual Interest to Germany and the United States:

- (1) Processing of oilseeds and development of new and extended uses for vegetable and animal fats and oils.
- (2) Processing, composition and development of new and improved uses of fruits and vegetables -- in particular, potatoes.
- (3) Processing and composition of wheat; improvement of baking characteristics of flour; and retardation of staling of bakery goods.
- (4) Composition of small grains, and their processing to improve feeding values.
- (5) Processing of sugar beets to improve yield of sugar.
- (6) Processing of hides and skins, development of new tanning methods, and improvement of the quality of leather.
- (7) Improvement in textile processing of cotton and wool, of the quality of cotton and wool fabric, and development of new textile equipment.
- (8) Improvement of methods for preserving foodstuffs, including packaging methods, and reducing losses and deterioration.
- (9) Development of improved methods for processing meat and poultry products; for tenderizing meat, and increasing storage life.
- (10) Processing and composition of alfalfa and other legumes to preserve and improve their feed value.
- (11) Development of new and improved methods for converting milk to a palatable, storable, convenient-to-use form; processing of butter to improve quality and spreadability; and improvement in methods of producing cheese with enhanced flavor and palatability.
- (12) Development of new and improved uses for farm residues and wastes.

### Scientific Level of Exchange, and Length of Time:

- (1) Exchange of administrators of utilization research -  
To discuss and give talks on organization of utilization research; coordination of research; nature and breadth of programs; balance between fundamental and applied research; cooperation with production, marketing and nutritional research; methods of obtaining counsel and cooperation of industry in translation of research results to a commercial scale; dissemination of results; patenting of discoveries,  
(Length of time of exchange: 2 - 4 months)

- (2) Experienced research supervisors -  
Specialized in such fields as fats, proteins, leather or cereals.  
(Length of time of exchange: 3 - 6 months)
- (3) Well-trained research workers -  
who are a few years beyond their Doctorate training.  
Length of time of exchange: 9 months to 1 year)
- (4) Students  
(Length of time of exchange: 1 - 1½ years)



## SOIL AND WATER RESEARCH

In planning for an exchange program, involving the sending of German scientists to the United States and American scientists to Germany, it should be realized at the outset that in certain branches of research in soil science the German research workers are more advanced than American research workers. The program should be planned to permit German scientists to come to America to take part in soils research activities which are not at the present time being actively pursued in Germany, and to permit American scientists to become familiar with some of the excellent research programs now under way in Germany.

In particular, research in soil science in the United States would be benefited if a few well trained American soil scientists could spend some time in German laboratories where research on the chemistry of soil organic matter and on soil microbiology is under way. Laboratories concerned with the function of the minor elements are also well advanced in Germany and American scientists could profit from experience in these laboratories.

For German soil scientists, the American work on soil mineralogy, on the mineral nutrition of plants, including the mechanisms of ion uptake and transport, and research involving the use of radioisotopes for the solution of soil and plant problems, would be recommended.

In planning for this program, the U. S. Department of Agriculture should start rather soon on the steps necessary to permit the employment of German citizens as research workers in the Department and on the selection of U. S. Department of Agriculture research workers who might most effectively utilize experience and knowledge gained in German soil research laboratories.



## AGRICULTURAL ECONOMICS, RURAL SOCIOLOGY AND HOME ECONOMICS

### Problems of mutual interest:

1. Research methods -- especially in calculating costs of production.
2. Organization of farm accountancy, including household production and expenses.
3. Measurement and analysis of labor and land productivity, including factors affecting productivity.
4. Studies of profitableness of different combinations of labor and land uses under different economic conditions, including problems of development in low-income areas.
5. Special questions of home economics:
  - (1) Housing and household equipment for facilitating work and raising standards of living.
  - (2) Nutrition -- especially research into physiological needs and nutritive value of food.
  - (3) Home and community methods of food preservation for home use.
  - (4) Studies of household consumption of food and other goods.







